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ABSTRACT

Plans for the development of The East African Examinations Council (EAEC) are outlined and the feasibility of long-range technical assistance from the U.S. Agency for International Development (AID) is discussed. The EAEC was established in 1967 by Kenya, Uganda, and Tanzania. Its purpose is to conduct within East Africa the academic, technical, and other examinations necessary in the public interest. Achievement tests traditionally conducted by various British institutions eventually are to be managed entirely by the EAEC. Areas in which technical assistance may be appropriate are: objective testing, statistical analysis of test results, research related to testing, and continuing professional education of EAEC personnel. Implementation of the plan for AID technical assistance is proposed, for the period 1970 to 1979. Financial support necessary for several different implementation strategies is estimated. (GDC)

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ED146205

exploring the feasibility of providing long-range a.i.d. input toward the development of educational examining devices of the east african examinations council

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SUBJECT:	EXPLORING THE FEASIBILITY OF PROVIDING LONG-RANGE A.I.D. INPUT TOWARD THE DEVELOPMENT OF EDUCATIONAL EXAMINING DEVICES OF THE EAST AFRICAN EXAMINATIONS COUNCIL
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FOREWORD

The purpose of this project is to provide assistance to the East African Examinations Council (EAEC) in identifying areas which the Council should emphasize in its developmental program, and to explore the feasibility of providing long-range AID inputs toward developing examining devices of the EAEC.

The EAEC was established in 1967 by the East African Community (Kenya, Uganda, and Tanzania). Its purpose is to conduct within East Africa academic, technical, and other examinations as the Council may consider necessary or desirable in the public interest. In May of 1968 the Council submitted a formal request to AID's East Africa Office of Regional Activities (EAORA) for help in identifying areas where technical assistance to the Council may be appropriate. The request specifically included the areas of objective testing, statistical analysis of examinations results, and related research. To fulfill this request AID contracted with the American Institutes for Research (AIR) to send a team of specialists to East Africa to render the requested services. This report is the result of that contract.

Among the many officials contacted during the period of the project were the following:

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3. East Africa Office of Regional Activities

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4. Ford Foundation East Africa Regional Office

J. Robin

5. IBM World Trade Corporation

H. G. Leet (Kampala); L. P. Newport (Nairobi)

6. International Computers Limited (formerly ICT)

M. Hoile (Kampala); A. J. Eve and H. Cartledge (Nairobi)

7. British Council Representatives

A. G. Hamer and J. Coles (Uganda); R. A. Hack and G. Preen (Kenya)

8. Miscellaneous Contacts

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B. University College, Nairobi

A. Porter, Principal

C. Ministry of Education, Kenya

G. Bowman, Inspector of English

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1968

WORK PLAN FOR TECHNICAL ASSISTANCE
TO THE EAST AFRICAN EXAMINATIONS COUNCIL

CHAPTER 1

SUMMARY DESCRIPTION

The system of secondary school leaving examinations in East Africa was adapted from the British system. Secondary school instruction has been geared to achievement tests developed by an external examinations organisation in cooperation with the Ministries of Education. Such examinations in East Africa traditionally have been managed by the University of Cambridge, the University of London, and other British examinations bodies.

As a result of a decision to assume internal responsibility for examinations, the East African Examinations Council Act of 1967 was signed by the governments of Tanzania, Uganda and Kenya. This act established a statutory, self-governing regional organisation, the purpose of which is "to conduct within East Africa academic, technical, and other examinations as the Council may consider necessary or desirable in the public interest" (Part I Sec. 2, EAEC Act of 1967).

In May of 1968 the East African Examinations Council (EAEC) submitted a formal request to AID's East Africa Office of Regional Activities (EAORA) for technical advice in identifying areas in which technical assistance may be appropriate. Areas specifically mentioned to be studied included objective testing, statistical analysis of examinations results, and related research.

1.1 JUSTIFICATION

Education has a crucial influence on the social and economic development of a nation. In developing nations, where advanced educational opportunities are severely limited, it is especially important that utmost care be taken in allocation and evaluation of these opportunities. Properly developed and administered, examinations can greatly reduce the wastage in

educational programs and in subsequent employment due to inadequately prepared students whose aptitudes and interests are not suited to the training they are receiving. The social and economic costs of inefficient allocation of human resources can be, and often have been, enormous. When funds for development of human resources are severely limited, procedures which reduce wastage of these resources, both human and financial, should be considered high priority by those responsible for development. Well designed and administered examinations can yield a significant increase in returns to investment in training and education, (1) by identifying those most suited for further training, or employment in specific fields, and (2) by setting standards of academic, technical, and professional achievement appropriate to social and economic needs, measuring the attainment of those standards, and awarding certificates of such attainment.

In East Africa, as in many other Commonwealth areas, examinations have been given by examining bodies based in the United Kingdom. These organisations have allowed a gradual assumption of examining responsibilities by the developing countries as adequate local expertise has become available. The West African Examinations Council, serving Nigeria, Ghana, Sierra Leone, and The Gambia, is an example of a regional educational testing organisation which has assumed responsibility for certain examinations functions previously performed solely by British institutions. The University of Cambridge Local Examinations Syndicate has formally agreed to co-operate in a gradual transfer of examining responsibility to the EAEC, and detailed plans have been made for this transfer. These plans allow for complete transfer of examining responsibility by 1976.

East Africans consider it vital that they assume complete control over their examinations as soon as possible. This will enable the educational systems in East Africa to become more sensitive and responsive to the steadily changing needs of this developing region. Since classroom activities naturally orient themselves toward centrally controlled examinations, the

internal technical capability to develop and administer these examinations will allow the East African countries to change the educational syllabuses, and thus the educational systems, to make them more appropriate to local needs while maintaining relevant international standards. The assumption of responsibility for examinations is therefore a major step, the effects of which will be significant in the private and government sectors as well as in the educational system.

The EAEC initially will concentrate its efforts on the assumption of full responsibility for the East African Certificate of Education (EACE) and the East African Advanced Certificate of Education (EAACE), formerly controlled entirely by the University of Cambridge Local Examinations Syndicate. It is also expected, as soon as it has the technical capability, that the EAEC will offer professional, commercial, technical, and public service examinations for both selection and certification purposes.

The request by the EAEC for a feasibility study thus comprises an unusual opportunity for AID, through a newly established regional educational organisation, to provide regional assistance to East Africa in its efforts to develop an independent examinations system. Such assistance will directly affect the evolution of education and training systems throughout East Africa.

1.2 GOALS

1.2.1 Final objective

There will be developed by the end of the proposed ten-year period of technical assistance, an indigenous regional examinations institution with professional research and development staff providing a wide range of selection and certification examinations throughout East Africa.

While the introduction and improvement of objective tests will undoubtedly be a major immediate activity of the project, new formats will be developed, beyond techniques now known, so that a fixation on any one testing format will be avoided.

The goal of the technical assistance project is to assist

the EAEC to improve the quality of the examinations system in general, through academic and in-service training, so that those responsible for examinations will be able to conduct research on major educational problems, to revise educational syllabuses in co-operation with the three Ministries of Education and based on research findings, and to develop suitable examinations to meet the needs identified by the EAEC. With the high level of training proposed, the professional staff will not only be capable of maintaining an existing system of examinations, but also will be able to respond creatively to new problems, to provide leadership in the evolution of educational systems, and to pass on to others basic skills of scientific thinking, data collection, and data analysis so that the EAEC can perpetuate itself in an adaptive manner.

1.2.2 Specific outputs

At the end of the project the following specific outputs are anticipated.

1.2.2.1 Measurement and evaluation specialists. Four professionally trained East Africans having the Doctoral degree and fifteen having the Master's degree in the area of educational measurement, each with at least two years of in-service training after the degree. These specialists will staff the Test Research and Development Unit (TRADU) and a Data Processing Unit (DPU) within the EAEC.

1.2.2.2 Examinations system. An examinations system, fully independent professionally, offering a wide range of examinations throughout East Africa. The major functions of the system will be: development of a wide variety of educational, professional, technical, commercial and government service examinations for selection and certification; administration of these examinations throughout East Africa; analysis of examinations results and procedures; applied and basic measurement and evaluation research; and specialized training in educational measurement.

1.2.2.3 Council Headquarters building. Availability of a permanent headquarters building for the EAEC is an essential

component of this project. Preliminary discussions with AID have indicated that a grant from this source for capital construction is not possible. Enquiries concerning other possible donors are being made, including the Ford Foundation and th Canadian International Development Agency. Unless a willing donor is located, or the limited resources of the Council can be used for building costs, the proposed project will be severely hindered.

1.3 ANTICIPATED SCOPE OF PROGRAM

1.3.1 Scope of East African Examinations Council

It is expected that by the end of the proposed project the EAEC will have assumed full responsibility for all major educational examinations in East Africa formerly administered by external examinations bodies. This includes: the East African Certificate of Education (EACE); the East African Advanced Certificate of Education (EAACE); and professional, technical, trade, and commercial examinations. It is also possible that the EAEC will develop for Universities appropriate examinations to assist them in the selection of university students; that it will develop and administer appropriate aptitude and achievement tests for use by private firms for the selection and upgrading of employees; and that it will develop and administer public service examinations for the selection and upgrading of government employees.

The Council has given immediate high priority to two examinations: the East African Certificate of Education (EACE) and the East African Advanced Certificate of Education (EAACE). In 196[illegible] approximately 34,000 candidates sat for the EACE in East Africa; Table 1 lists the 81 separate subject areas which were tested in this examination. (All tables are at the end of this document). It is projected that in 1979 this examination will be taken by approximately 134,000 candidates who will produce more than 400,000 papers to be evaluated. These projected figures are given in Table 4, which is referred to in greater detail below.

1.3.2 Proposed scope of AID technical assistance

In its assistance to the Council, AID will concentrate on the research and development needs of the Council. It is proposed that a Test Research and Development Unit (TRADU) and a Data Processing Unit (DPU) be established in the Council, parallel to an Administrative Office, with the heads of each Unit reporting to the Secretary (chief administrative and professional officer) of the Council. Table 2 shows the proposed organisation of TRADU in 1979. The Deputy Secretary (TRADU) and the three Principal Research Officers (PROs) will have Doctoral degrees; each Research Officer (RO), the Data Processing Manager, and the Systems Analyst, will have a Master's degree. The Office Supervisor and Librarian, though not trained by AID, will both be university graduates with specialized training and experience in their fields.

The basic functions of TRADU are represented by the section names: School Examinations, Professional and Technical Examinations, Research and Development, and Data Processing. The function of the DPU is to serve data processing needs of TRADU and the Administrative Office. Since most of the data processing will involve scoring and reporting of examinations, rather than statistical data analysis, the DPU will be placed under direct control of the Secretary rather than as a part of TRADU.

A summary of EAEC projected income and expenditure for the ten years of the work plan, from FY 1970 through 1979, is presented in Table 3. This summary indicates that at the end of an intensive development period the Council should be well on its way to financial independence based on income from examinations fees. Detailed computations, upon which Table 3 projections are based, are given in Tables 4 and 5. Table 4 presents projected examination volumes and fee income (FY 70-79), and Table 5 presents detailed EAEC estimated expenditures for the same period.

1.4 PLAN OF ACTION

The six components of the plan of action herein outlined

jointly provide the thrust expected to develop a professionally independent regional examinations institution by 1979.

1.4.1 Training

Training is the most important element proposed for achieving the project objective; it is designed to ensure institutional viability after the phase-out of technical assistance. The training program includes not only persons who will comprise the TRADU and DPU staff, but also other educators who will assist in examinations by providing support in areas such as item writing, research, test development, and test administration. The proposed training program consists of internal courses, short-term courses, and formal academic courses.

1.4.1.1 Internal courses. Training internal to the institution will consist of on-the-job training of local personnel under supervision of external test development and research specialists. For all participant trainees, there will be a two-month period of orientation and familiarization with the organisation and operations of the EAEC prior to their overseas training. After each participant returns, intensive on-the-job training will continue for two years. The object of the latter training is to give each participant as broad a background as possible in all aspects of TRADU and DPU. During the last years of the project, local personnel increasingly will assume staff supervisory roles while external technical specialists will shift from operational to advisory roles prior to their departure.

1.4.1.2 Short-term courses. Brief formal courses will be conducted frequently throughout the project by short-term staff and consultants. Many of these courses will be "pre-packaged" by U.S. testing organisations which give intensive measurement courses in numerous locations. During the latter years of the project these courses will be conducted entirely by local staff, and their participation during the middle years will be scheduled to the fullest extent possible. Participants in these courses will be mainly local personnel not on the EAEC staff, such as members of the Ministries of Education

responsible for the Primary School Leaving Examinations in East Africa. This training will have a two-fold result: it will establish a source of trained personnel to assist the EAEC with peak work loads in areas such as item writing, item editing, and test administration, and it will provide ancillary benefits by increasing familiarity with recent developments in testing techniques within the East African educational community. The three basic types of short-term courses are described immediately below.

Measurement and evaluation courses. These courses will be several weeks long and will cover fundamentals of test development, statistical analysis of test results, and writing and editing of objective test items. At first these courses will be attended primarily by EAEC staff, but the scope will later be extended to include East African educators who would benefit from such instruction.

Item writing courses. Such courses will be held for participants from each member country and will be repeated frequently throughout the project. Normally these will be two-week courses. Their purpose will be to develop a cadre of local educators who can serve as item writers for the Council, allowing staff to devote their time to organisational, test development, and research efforts. Having all items written by East African educators from the inception of the project will ensure that the form and content of the items are suitable to the East African environment and culture.

Test administration courses. These courses, covering techniques for administration of objective and other tests, will be held as needed for staff of the EAEC, appropriate staff of the Ministries of Education, and government and private sector personnel officers. The courses will normally require three days.

1.4.1.3 Formal academic training. This portion of the program will include formal academic training through degree programs and practical experience at established educational institutions in the United States and, possibly, East or West

Africa. This training will be restricted to full-time staff of the EAEC. The staff recruited for academic training will be graduates, preferably with some teaching experience. Arrangements will be made for a five-year guaranteed period of service from all staff trained under this program, but some losses will inevitably occur. Some "wastage" has thus been programmed in the training schedule. Table 5 shows the proposed training schedule. The schedule provides for seven trainees to begin a Master's program in September 1970, seven in September 1971, and five in September 1972. All trainees will return to work for the EAEC for one year before being eligible for Doctoral training. In 1972 two trainees will enter a three-year doctoral program and in 1972 two more will do the same. Allowance has been made for some wastage, at the Master's level, due to inability to complete courses and to transfers from the EAEC.

During preliminary discussions with the Council staff, it was suggested that an attempt be made to establish a Master's program at the Universities in East Africa, so that these courses might be more relevant to the needs and conditions of this region. It was mentioned that one or two University Colleges had a nucleous staff who might begin a course of this type with assistance from the specialist staff who would be attached to the Council under the project. It was understood, however, that the Masters courses should be taken abroad should the establishing of the courses in East Africa result in delaying the start of the project.

West African training may be possible under arrangements presently being made with the College of Education of the University of Lagos. Under a plan now being developed, U.S.-trained staff members of the West African Examinations Council are teaching part-time at the University. When this plan is fully implemented there will be available at the University of Lagos a series of undergraduate courses, and later, graduate courses, in the areas of educational measurement and statistics. As this program is developed arrangements may be made to send

staff members of the EAEC to the University of Lagos for Master's level training. This will not only reduce out-of-region training costs, but also will utilize training capabilities which are African based and thus more likely to be relevant to East African needs. This will constitute an efficient cross-relationship among external assistance projects in Africa, as the U.S. graduate training provided to the West African Examinations Council has been sponsored both by the USAID Participant Training program and a training grant from the Ford Foundation.

When a sufficient number of professional staff with the Doctorate and practical experience in measurement and evaluation are available in the EAEC, an academic program in this field should be established jointly between the EAEC and East African educational institutions.

The overseas training plan for graduate training provides for four persons earning the Doctoral degree and fifteen the Master's degree over the first six years of the project. Master's training in the U.S. will be at the University of Pittsburgh where for several years there has been a special program in co-operation with the West African Examinations Council. A Master's Degree program of this type will include courses in statistics, psychological measurement, basic research methodology, the history and systems of psychology, and one or more courses in applied psychology. The Master's Thesis will be a scholarly research paper written under professional supervision.

Doctoral training for the participants will be diversified so that the EAEC can have the benefits of several important schools of thought. Appropriate locations for the Doctoral training include the University of Chicago, the State Universite of Iowa, the University of Southern California, Columbia University (Teachers College), and the University of Pittsburgh. At these and other Universities the students will receive thorough training in advanced statistical techniques, theoretical and applied psychological measurement, research methodology

in several of the disciplines of psychology, and experimental design. The Doctoral Dissertation will be based on an original research study carried out at a fully professional level of sophistication.

In preliminary discussions, questions about the need for such a large amount of high-level academic training have been raised. Master's training, particularly a two-year course, plus two years of post-degree in-service training would provide an adequate level of technical ability if the goal were to maintain an established system of examinations. Doctoral training, associated with intensive applied work in examinations bodies outside of, as well as within, East Africa, is essential to the development of technical expertise able to meet steadily developing needs. Specialists provided by AID would be able to introduce innovations in the examinations system to make it more relevant to present-day needs, but this is not enough. When the technical assistance is withdrawn the EAEC must have fully trained scientists capable of continuing the evolution of the examinations system. It is not clear exactly what aspects of Doctoral training yield these increased benefits. Whether it is the experience of successfully designing and conducting independent scientific research, the practical experience in U.S. research institutes and examinations bodies, the additional years of general exposure to rigorous intellectual and scientific thinking, or other factors, is not known. What is clear from experience, however, is that the additional benefits which accrue from this kind of Doctoral training far outweigh the costs.

In order to maximize the effectiveness of this integrated program of theoretical and applied training, the technical assistance contract will include necessary funds for this intensive training program.

1.4.2 Test development

A major aspect of the plan is the development of testing programs. This not only has a significant training function but also immediately provides needed examinations.

It is expected that efforts initially will be directed toward introduction of objective tests in the East African Certificate of Education. In 1968 more than 20,000 candidates registered for the English Language and Geography of East Africa examinations. More than 10,000 registered for Literature, Development of Tropical Africa, East African History, Swahili, Mathematics A, Mathematics B, Biology, Physics/ Chemistry, and Health Science. Objective formats would probably be appropriate for at least a portion of each of these examinations. Extensive training, writing, trial testing, editing, and evaluation studies will be required over the next two years in order for some of these examinations to be partially objective by 1972. These examinations will have to be developed annually for several years.

Examinations to assist in selection into higher academic and professional training programs are also likely to be developed. There is a need for general university entrance examinations that estimate scholastic aptitude as well as achievement. In addition, specialized entrance examinations for law, medicine, engineering, and nurses training may be required. If the Ministries request assistance in these areas, it will be feasible for the Council to develop these examinations. Once they have been carefully developed and validated, such examinations, given to much smaller groups in highly controlled situations, can generally be re-used. The validation process, however, must be continual, resulting in periodic revisions of the examinations.

Indeed, the Ministries responded to this need by establishing the East African Aptitude Testing Unit at Nairobi. This operation was unfortunately discontinued due to lack of funds and appropriately trained personnel. If these examinations are given through the EAEC, existing tests developed in Africa and used in a limited way in East Africa could provide the initial basis for services in this area. These tests, of course, will have to be extensively validated and revised for the particular groups for which they are to be used. It is

likely that new test development will be required in order for the tests to have a fully satisfactory level of validity. Certain highly specialised technical selection examinations, such as those for pilot training, could be made available with a moderate amount of development and standardisation since they already exist in a form found usable in numerous countries throughout the world.

Commercial, technical, and trade achievement examinations (Royal Society of Arts, City & Guilds of London Institute) will require long and expensive development. In many cases objective formats are not appropriate for these examinations. Though a start can be made soon, this will probably be one of the last groups of examinations to be taken over completely by the EAEC. An important contribution in this area which may occur rather early is the development of selection examinations for entry into technical and commercial institutions.

In addition it is expected that the Council will develop and experiment with new formats for such purposes as measuring oral language achievement in English and Swahili or for selection and upgrading of high-level government and business administrators. Such examinations are not currently top priority but they may be sufficiently important to justify development later in the project.

1.4.3 Examinations procedures and analysis

Administrative and data processing systems will be complex for, although some standard procedures developed for business and for academic research can be applied, many problems are unique to the examination of a developing country. Those problems occur in nearly all areas of testing, from the experimental stage to distribution, grading, and the final issuing of results. For example, it is standard procedure to try out new objective test items before using them in an examination. Normally items are administered on a trial basis a year in advance to a class that will have graduated by the time the examination is given operationally. In East Africa, however, there are a number of repeaters who, having seen the

items in trial form, might be given undue advantage in the examination over those taking it for the first time. New procedures for the pre-testing of test items must therefore be devised.

In addition, because of the extremely high value placed on examination results in East Africa, special guarantees against impersonation and against ingeniously devised forms of cheating must be developed. Conditions in examination halls are often quite crowded and the standard separation between candidates used in the United States is often not possible. Since it is relatively easy to duplicate the responses of a near neighbour, new procedures must be devised to make objective tests practical under these conditions. Further, while it is standard practice in the United States to keep examinations under maximum security after, as well as before administration, so that test questions can be repeated from one year to the next, in East Africa there is a tradition of publishing examination questions after the tests have been given. Also, since maximum security is difficult to maintain, it may not be possible to re-use items. Finally, procedures must not only ensure against human and machine errors in determining and issuing results, but also guarantee that the results are issued quickly to distant places.

Such examples of problems in test development, security maintenance, and administration are but a few among many which will require novel solutions. A major effort in the development of examinations procedures and analysis is clearly an essential component of the project.

Specialist assistance will be provided in the general area of examinations as detailed below.

1.4.3.1 Data processing and systems analysis. Technical assistance will include advice on systems analysis with detailed planning for complete data handling systems for each examination program. A Data Processing Unit (DPU) will be established in cooperation with the EAEC to handle present and anticipated needs. These efforts will be co-ordinated

with the training program to provide local expertise in computer programming and systems analysis.

The DPU will require access to electronic document reading equipment and a computer. During the initial one-to-three years of the project use of such equipment can probably be rented from local sources. At Kampala there is an optical mark page reader at the Examination Division of the Ministry of Education, an IBM 1232 attached off-line to an IBM 534 card punch unit. There is an ICL document scanner, the 1900 Series Universal Document Transport, at the Kenya Treasury. Processing time could be rented on either these machines, during early years of the project, for the rapid scoring of objective tests.

With reference to computers, at Kampala the Uganda Computer Services (Uganda Treasury) has an IBM 360 (Model 30), with 32K bytes of main storage, four 2315 tape units, a 1442 Model NI card read punch, and a 1403 (Model 2) printer. A 2311 disk drive is on order. Time could be rented on this machine, and would satisfy computer needs of the EAEC for the first one-to-three years of the project.

Eventually the EAEC will probably have sufficient volume of data processing to justify full-time access to a computer and document reading equipment. The need for security and priority access to equipment may eventually necessitate the EAEC having data processing equipment under its full control. Whether such equipment should be acquired on a rental or on a purchase basis, however, is a highly technical decision and sufficient information about future data processing needs is not available to make such a decision at present. Adequate funds are provided in the proposed technical assistance budget for either rental or purchase of data processing equipment, and the decision will be made on the basis of recommendations of the Data Processing Manager to be provided as one of the technical assistance specialists under the project.

1.4.3.2 Development of examinations procedures. Development in this area will include establishment of procedures, in

close co-operation with Cambridge, for pre-registration, computer pre-printing of machine scorable answer sheets, document design, scheduling, quality control, and interpretation and presentation of results. Technical assistance in this area has already been provided by Cambridge and the Ministry of Overseas Development.

1.4.3.3 Statistical analysis of examinations results. Reports of examination results will be prepared for the Ministries of Education, summarizing student performance by schools, districts, or other classification as requested by them. Student responses to objective tests will be analysed for major testing programs, and tabulations of common errors will form the basis for reports to teachers so that subsequent teaching emphasis may be changed to accomplish more adequate syllabus coverage.

1.4.4 Research

In an organization that is primarily oriented toward the annual production and administration of large numbers of examinations, there is a constant danger that research will be given low priority and somehow never get done. Yet basic and applied research underpins the entire examinations system. Validity studies must be made, and formats and examinations must be kept in pace with changing needs. Thus the plan includes a separate research section, relatively free of responsibility for the development of operational examinations, to design and execute investigations necessary to the introduction, evaluation, and further refinement of testing programs. The research component of the technical assistance has two general aspects.

1.4.4.1 Applied and basic studies. Research studies necessary to the introduction of objective testing will be conducted. Once such programs have been initiated, research will be designed to evaluate such programs periodically. Examples of the latter kind of study would be investigations to determine the equivalence of objective with traditional (essay) tests of the same syllabus, or studies of the ability of secondary

school selection examinations to predict performance of students in the secondary schools and eventually on the East African Certificate of Education.

1.4.4.2 External research co-operation. The availability of several external advisers within a single regional institution, and the eventual availability there of fully trained East Africans, will permit co-operation on educational research projects between East African Examinations Council research staff and faculty of East African educational institutions.

1.4.5 Administration of examinations

The Administrative Office of the EAEC will be responsible for making all arrangements for the administration of Council examinations, including co-ordination with the three Ministries of Education for syllabus revisions, moderating committees, and so forth. The distribution and invigilation of the EACE and the EAACE examinations will continue to be managed through the Ministries of Education. The fees from examinations will be used to reimburse the Council and the Ministries for expenses involved. It is expected that present examination fees will not be raised; fees formerly paid to external examinations bodies should be sufficient to finance most of the Council's total operation after the initial years of development. Table 3 summarizes the projected income and expenditure for the Council throughout the ten-year period. Although separate budgets are presented for the projected units of the Council, the division of responsibility is more apparent than real. In actual practice the units will be highly integrated and interdependent.

1.4.6 Council Headquarters Building

Construction of the EAEC office building for examinations officers, research staff, data processing staff, and supporting technical and clerical staff is an essential component of the plan. The Council has no permanent quarters of its own. It is clear that the scope and size of the Council's operations will soon require the Council to obtain substantial permanent office space.

1.5 PLANNED INPUTS

1.5.1 Project Phases

The technical assistance inputs are in five phases as shown in the table below. These phases are not discrete, but rather represent degrees of emphasis. The Operational and Advisory Phases, for example, will be integrated as much as possible. Local staff will begin active participation as soon as practicable, although each returned trainee should work with an advisor for approximately two years before the advisor leaves the project.

Technical Assistance Phases[1]

Phase	FY Ending	Years	AID Contribution ($ x 1,000)	% of EAEC Costs
Feasibility	1970	1	64	16%
Developmental	1972	2	986	46%
Operational	1976	4	1,323	28%
Advisory	1978	2	496	19%
Completion	1979	1	62	5%

[1]These costs are detailed in Table 7, and referred to below. The cost of the building is omitted here.

1.5.1.1 Feasibility Phase. This includes the work done by the team of consultants, which is the basis of this PROP. The phase will also include selection of trainees for academic study in educational measurement and evaluation, program planning with the Examinations Council staff, and investigation into such matters as availability of local data processing facilities, ordering of books for the technical training and research library, and identification of equipment needed for the beginning of the contract. This modest investment by AID during FY 70 will pay high dividends in the next phase by enabling the full team of technical advisers to begin

functioning at a relatively high level shortly after arrival. Local costs will be met by the EAEC as indicated in the budget estimates. In funding the early part of this phase of assistance AID has in no way committed itself to a program of long-term assistance to the Examinations Council.

1.5.1.2 Developmental Phase. This phase will last two years (FY 71-72). It will involve research, including experimentation and demonstration, regarding alternative examination procedures best suited for implementing the policies and goals of the Examinations Council. In particular, the feasibility of using objective tests in the East African Certificate of Education will be determined. It is expected that this phase will be substantially funded by AID because of the innovational nature of this work. During this period the EAEC will, in addition, make substantial new investments in the related development of organisation and staff required for the administration of its examinations.

1.5.1.3 Operational Phase. The Operational phase will last four years (FY 73-76). It is designed to set into full operation the procedures and testing methods found during the previous phase to be appropriate to the Examinations Council's purposes. During this phase the Examinations Council's financial contribution to the costs of TRADU will grow substantially. It is expected that the tests developed by TRADU will considerably reduce the per capita costs of examinations and that the Examinations Council will rapidly be able to assume the full operational costs of TRADU.

1.5.1.4 Advisory Phase. This will last two years (FY 77-78). The technical assistance program will concentrate on in-service training of technical staff in the Examinations Council, four of whom will have by this time earned Doctoral degrees. Those professionals will assume the supervisory roles in TRADU which prior to this time will have been filled by external testing specialists.

1.5.1.5 Completion Phase. This phase involves only one-half a man-year of resident advisory services and provision for

consultants as requested by the Examinations Council. This will provide limited advisory services during the first year that the EAEC assumes full professional and fiscal responsibility for TRADU.

1.5.2 Technical assistance personnel

The recommended schedule of technical assistance personnel is summarized in Table 8. There is a total of 47 1/2 man-years of resident specialists and 4 1/2 man-years of short-term staff and consultants over the ten-year period. Essentially the full complement of specialists are in residence for the six years which constitute the Developmental and Operational Phases. During the Advisory and Completion phases there is a rapid phase-out of technical assistance personnel as trained East African specialists take over full operational control of TRADU. A major responsibility of all AID technicians will be the in-service training of their staff and replacements. The recommended positions and job descriptions are as follows:

1.5.2.1 Deputy Secretary (TRADU) and Chief of Party (AID). The Deputy Secretary (TRADU) will have overall responsibility for the operations of TRADU. He will concentrate his efforts on long-range planning and policy developments. He will work closely with the Secretary and the Council committees in overall program development. He will also, through the Secretary, work with government ministries and with representatives of the private sector in the process of assisting the overall development of the Council. He will be in a position to translate policy decisions of the Council into practical programs which can be developed by TRADU.

1.5.2.2 Data Processing Manager. This specialist will develop a staff of data processing technicians within the Council and assist them in the analysis and development of data processing and administrative systems. He will be required to develop low cost methods that will be capable of handling the steadily expanding and highly diversified data processing needs of the Council.

1.5.2.3 Principal Research Officer (School Examinations). This specialist will supervise the development of objective and other achievement tests for certification examinations. He will organize his technical staff and specially-trained item writers and editors to produce a wide variety of examinations for the Council. Initially the emphasis will be upon the large volume examinations in the East African Certificate of Education.

1.5.2.4 Principal Research Officer (Professional and Technical Examinations). This specialist is responsible for directing the development of a wide variety of professional, technical, commercial and public service examinations as requested by the Council. In addition, he must be thoroughly conversant with current industrial and management assessment procedures and capable of devising unique and inexpensive procedures for selection and up-grading examinations involving relatively small numbers of candidates (under 10,000 per examination).

1.5.2.5 Training Officer. This specialist will plan and administer the full range of formal training programs described in the work plan. He will recruit and select trainees for the academic programs, maintain contact with them and their academic advisors, monitor their progress, and modify their programs as needed. In addition, he will organize all internal and short-term training courses to be offered by the Council throughout East Africa. He will also organize regular professional staff seminars, and presentations of research reports within TRADU. He will provide assistance to the Librarian in the development of an adequate training and research reference library for the Council.

1.5.2.6 Principal Research Officer (Research and Development). This specialist will supervise research into existing tests, study the effects of new tests, and develop new examining techniques. He will provide consultation on statistical methods best suited to projects in the other sections, and offer assistance in the design of all research studies. He will coordinate the entire research program of the EAEC.

1.5.2.7 Contract Business Manager. This person will be responsible solely for AID/Contractor business affairs and all contract related matters in East Africa. He will establish the required financial, personnel, and equipment records systems and be responsible for ensuring that the various technical provisions of the contract are met. It should be noted that the Contract Business Manager has no responsibility for either establishing or articulating the TRADU office procedures, but is solely responsible for AIR/Contractor related matters. TRADU office procedures will be a responsibility of the EAEC Office Supervisor (See Table 2), although the supervisor may consult with the Contract Business Manager on establishing these procedures. Since the position of Program Co-ordinator or deputy to the Deputy Secretary (TRADU) was eliminated during preliminary discussions, the Contract Business Manager is needed for the initial eight years of the project so that the Chief of Party (AID) will not be burdened with the many administrative contract details associated with a project of such a scope. A regular employee of the AID/Contractor will fill this position, and will be familiar with the Contractor's business procedures. Since the need for such a position will not extend beyond the life of the project, it will be neither necessary nor efficient to train a local employee in these complex duties.

1.5.2.8 Consultants. Provision has been made for the consultants and short-term staff to assist the project for specialized purposes. Given such a broad range of responsibilities it is not possible to have within a small number of specialists all of the skills required, and it is not now possible to predict many of the specific needs which will develop during the course of the project. Experience has shown that the careful use of short-term consultants can be extremely helpful in providing low-cost flexibility of response to specialized or unanticipated needs.

1.5.3 Research Officers (Local Staff)

Research Officers trained under this program will be able

to act in any of several specific capacities depending on their interest and ability. Those who work with operational sections will provide liaison with appropriate agencies, help to coordinate item writers, carry out pretesting, perform item analyses, arrange for the production, distribution, invigilation, and collection of examinations, and see that examinations results are reported on schedule.

The Research Officers associated with the Research and Development section will devise studies to test the applicability and validity of various forms and types of examinations. In addition, they will perform studies related to such things as the effect of regional and native language differences on test performance at all levels. They will work with the staff of the operational sections to devise new tests for specific purposes and act as consultants to outside agencies and organizations which want to design in-house testing operations.

The Systems Analyst associated with the Data Processing Unit will help to write the numerous computer programs necessary for the analysis of a wide variety of examinations, help to plan systems approaches to specific testing operations, and advise the staff of the other sections on matters of answer sheet format, data processing capability, and other areas of joint interest.

1.5.4 Budget

The draft AID budget (FY 70-79) is given in Table 7. The total projected cost is $2,931,000. The budget includes technical assistance ($2,004,000), training ($518,000) and equipment ($409,000). These figures are rough estimates; the bases for the major calculations are given in the Table 7 footnotes. Table 10 lists assumptions concerning local support items for the contract.

CHAPTER 2

CONTEXT

2.1 BACKGROUND

The East African countries, like many other members of the Commonwealth, have a system of secondary school instruction oriented toward a certificate-granting organization external to the school system. Although there are certain disadvantages to strong central control of an educational system, it does provide a useful common criterion for measuring educational achievement in countries where there is a diversity of instructional quality within the secondary school system. It also enables the Ministries of Education to implement educational reforms on a broad basis.

The University of Cambridge Local Examinations Syndicate, which has been responsible for secondary school leaving examinations in East Africa, is co-operating with the Examinations Council in the gradual assumption of responsibility for the East African Certificate of Education (formerly the University of Cambridge Overseas School Certificate) and the more advanced examinations given to students completing an additional two years of schooling, the East African Advanced Certificate of Education.

The per capita cost of conducting a Cambridge-type examination in East Africa has been estimated by Cambridge at several times the cost of conducting the examination from Cambridge. Because of this cost factor and the necessity for examinations standards to be maintained, Cambridge has advised caution with this change-over. With limited numbers of examiners available in East Africa, and the high turn-over among these few, Cambridge recommends the Examinations Council initially take over the more advanced of the two examinations, as lesser numbers of candidates, and thus examiners, will be needed. However, several examinations Council members contacted suggested that it would be sounder educational policy for

the Council initially to assume responsibility for the East African Certificate of Education, with its larger numbers of candidates and its broader impact.

Experience with the West African Examinations Council has demonstrated that it is practical to use objective achievement tests for some subjects of secondary school leaving examinations. For the past two years objective tests have been used along with traditional (essay) tests for several subjects of the Joint Examination for the West African School Certificate and the General Certificate of Education. Research conducted in Ghana has shown that objective tests are somewhat better than the traditional tests in predicting teachers' ratings of expected student performance on the secondary school leaving examination. Similar research will be conducted in East Africa as considered necessary by the EAEC.

Visits by several representatives of the Ministries of Education in each of the three countries to the West African Examinations Council and U.S. testing institutions have resulted in a high level of appreciation for the advantages of objective tests. Indeed, East African Ministries already use objective examinations extensively in their primary school leaving examinations and may request assistance from EAEC in improving these examinations. The EAEC hopes to introduce objective tests in the EACE as soon as the necessary capabilities are present in East Africa. The use of objective tests would make it possible to increase the rate of assumption of responsibility for these examinations. More important, objective tests are able to provide more thorough coverage of the syllabuses and result in more reliable marking of papers. As is emphasized in the Cambridge report, however, prudence must be exercised to ensure that the objective examinations are of equivalent standards to the traditional examinations for which they will be substituted and that the objective format is designed so as to have no undesirable influence on teaching methods in the secondary schools. Objective tests, although easier to grade than traditional papers, are much more difficult to prepare.

For this reason it will be necessary to train a substantial number of item writers and test development specialists to accomplish testing goals.

The EAEC is committed to the development of a testing organization fully responsive to East Africa's needs. Though the Council has been in existence for less than two years, it is solidly backed by the East African community and the three Ministries of Education. Present fiscal arrangements provide for 42% of the annual budget to be met by the Community, with the remaining 58% equally divided among the three governments. The Council is also backed by the institutions represented among its membership. These include the following: the Chairman, who is Vice-Chancellor of the University of East Africa; two members from each constituent college of the University of East Africa, including one member of each College's Academic Board; three members appointed by each government, the head of a secondary school and a technical institution appointed by each government; a member of the University of Cambridge Local Examinations Syndicate; and two members representing the East African Community. A senior East African educator has been appointed as Secretary (administrative head) to the Council.

2.2 CURRENT SITUATION

At present, the climate is very favourable for AID to assist an already established statutory East African regional organization in its beginning attempts to evolve control over a critical regional educational function. The Examinations Council has initiated a formal request to AID to determine the feasibility of such assistance. In addition, there are informal indications that this project would receive high priority both in local contribution of funds and in provision of necessary manpower.

The feasibility study, which constitutes the basis of this proposal, was carried out by a team of consultants through a contract with the American Institutes for Research, Pittsburgh, Pennsylvania. This organization was selected because it has had considerable experience introducing objective selection and

achievement tests into developing countries. The initial study was done in August and September of 1968 by the following consultants: Victor J. Cieutat, Contract Chief of Party to the Nigerian USAID/AIR contract team and Acting Director of the Test Development and Research Office of the West African Examinations Council until October 1968; Richard R. Rowe, Associate Dean of the Graduate School of Education, Harvard University, and former Chief of Party of AIR's Nigerian project; and Joel B. Aronson, Research Scientist with AIR and former resident technical assistance adviser on educational testing in Thailand. A revision of the initial study was produced by Cieutat in April 1969.

2.3 PROBLEMS

There are three notable difficulties anticipated in the implementation of these recommendations. The first difficulty is in the initial stage of the project and involves the scarcity of experienced local professionals having test development and research training. This may be over-come by a heavy dependence on external assistance for operational roles during the first two years, while East Africans complete Master's degrees in the U.S. Thereafter, there will be a steady assumption of responsibility by the East Africans throughout the project. According to the schedule recommended in Table 6, Doctoral trained East Africans will begin assuming full responsibility for sections of TRADU within six years of the beginning of the project. <u>This plan will work only if the East Africans give this project sufficient priority so that the unusually high calibre of manpower required is made available</u>. This has been discussed with Council members and it is recognized as essential to the successful development of the Council. The East African Governments give every reasonable assurance that, while it will not be easy, the Council will be able to provide the required manpower.

A second difficulty concerns limited East African fiscal resources for the necessarily large initial expenses involved in the project. These will be especially high during the first

two years of the proposed project due to the innovational nature of many of the developments during that time. The rapid development of TRADU will also necessitate comparable rapid growth in the Administrative Office of the Council which will be responsible for the conduct of the examinations. Thus, in determining the EAEC contribution required for this project, a substantial amount of the increased costs of the Administrative Office as well as the total budget of TRADU have been taken into account. The total direct financial cost of the ten-year project to East African Governments will be substantial ($4,333,000).

As the innovations introduced by the project become operational, especially those involving objective tests in the large testing programs, the savings they will bring to the EAEC should make it very likely that the Council will be self-supporting from its fees. During the latter years of the project, if programs develop as anticipated, the Council is expected to become much less dependent on government subsidy (see Table 3).

The final area of possible difficulty is a delay in the assumption of complete responsibility for East African examinations by the Examinations Council. Since the improvement and modification of examinations is seen as urgent by all three governments there has been, in the past, serious consideration within Ministries of Education of unilaterally assuming control of the examinations. Despite discussions of establishing the Council, for years progress toward its formal inception was slow. The Council must now rapidly develop its capacity to respond to the urgent needs of the region. If this process should lag, there will be strong pressure within each country to move on its own.

CHAPTER 3

STRATEGY

3.1 CONTRIBUTION TO U.S. TECHNICAL ASSISTANCE GOALS

AID's primary objective in the education sector is to assist the East African countries to raise the productivity of their educational programs. This project will directly contribute to that objective by identifying those students most suited for further training or employment in specific fields, by setting standards of academic, professional, and technical achievement appropriate to economic needs, measuring the attainment of those standards, and issuing certificates of such attainment. The Council will also yield significant indirect benefits in terms of educational productivity. Because the content of exams will become far more responsive to the desires of the Ministries of Education, these Ministries will find it far easier to effect needed changes in curriculum and syllabus content. Such changes are probably the most important single requirement for raising the productivity of investment in education.

3.2 OPTIONS

This report makes specific recommendations for a program of assistance to the EAEC. There are four options which should be given consideration. These options are listed in order of desirability. Table 9 summarizes the costs of Options 1 and 2.

3.2.1 Option 1

This option would provide assistance as recommended in the report. This would give maximally appropriate assistance to the Council in its initial years of development. The total cost is $2,931,000 over ten years.

3.2.2 Option 2

This option would eliminate assistance for professional and technical examinations. At present these examinations have less priority than the major educational examinations and

if a reduction of program support were necessary this would be the first function to eliminate. On the other hand, while technical training has traditionally been given low priority in the educational system it is increasingly recognized by East Africans that such training is vital to their development. Elimination of this function in the program would substantially reduce the value of the project. Savings would be $441,000, making a total cost of $2,490,000. Table 9 details the savings involved.

3.2.3 Option 3

This option would provide technical assistance on a country rather than a regional basis. Assistance could be provided to the three Ministries of Education. Because of the necessity of duplicating technical assistance specialists, instead of concentrating them in a single unit, costs for this approach would be much higher than if handled on a regional basis. It would also be difficult to share data processing systems on a decentralized basis. Training costs would be unnecessarily duplicated by this approach. Furthermore, the needs of the Examinations Council would not be met by such a program. Finally, this option runs directly counter to present AID policies of supporting regional development. No estimates of the cost of this have been made.

3.2.4 Option 4

This option would provide technical assistance by topping off the salaries of technical assistance specialists. Because these specialists will be filling both operational and training roles during the major portion of the project, and because the Council will be paying the full salaries of the technicians' counterparts, this approach is not recommended. While this plan would be appropriate for filling a purely operational position, it is not appropriate when the major purpose is in-service training of counterparts. No estimates of the cost of this option have been made.

In summary, Option 1 provides for a maximally effective project, assuming that alternative resources for provision of

office space are found. Option 2 would seriously reduce the effectiveness of the project. Options 3 and 4 are considered undesirable.

3.3 CO-OPERATING REGIONAL LEADERSHIP

As detailed above, the Examinations Council is a statutory self-governing regional organization established by an Act of the East African Common Service Organization (now the East African Community). Membership on the Examinations Council reflects the wide basis of regional support from Ministries of Education, Universities, secondary schools, technical schools, the Cambridge Syndicate, and the East African Community. The Examinations Council was established by East African educational leaders and is an entirely indigenous regional institution. Thus, this project presents an unusual opportunity for AID to support an important developing regional organization.

3.4 CROSS-RELATIONSHIPS

AID support to the EAEC is complimentary to several other AID-assisted projects. In the Teacher Education in East Africa (TEEA) program, for example, AID-supported teacher trainers (tutors) are helping to instill better testing and evaluation techniques in East Africa's future teachers. Just as AID support to the EAEC will facilitate East Africa's ability to achieve desired curriculum reform, AID is working toward this same objective through its assistance to the Institutes of Education (through TEEA), to the Agriculture and Veterinary Science Faculties of the University of East Africa, to the Vocational Agriculture project in Kenya, and to numerous other educational projects.

This project will also have important relationships with the AID-assisted projects in other parts of Africa. The out-of-region training program will involve the West African Examinations Council and the College of Education of the University of Lagos, both of which are recipients of AID technical assistance.

CHAPTER 4

PLANNED TARGETS AND RESULTS

4.1 ANTICIPATED ACCOMPLISHMENTS BY 1979

Progress toward project targets is outlined in the plan of action above. There are both organizational and functional targets.

4.1.1 Organizational

It is proposed that there be established within the East African Examinations Council a Test Research and Development Unit (TRADU) and a data Processing Unit (DPU) as outlined in Table 2. These Units are to be completely staffed with East African professionals by 1979. By then they will have received appropriate graduate training in the U.S. and two or more years of in-service training in East Africa. The Deputy Secretary (TRADU), and the Data Processing Manager (DPU), will report to the Secretary of the Council. The detailed programs of each Unit will be determined by the policies established by the Council.

4.1.2 Functional

TRADU will have the following capabilities: to design and execute research projects; to develop and evaluate new approaches to Council objectives; to develop achievement and aptitude tests for the purposes decided by the Council; and to support the data processing requirements of the Council. The function of the DPU will be to serve all data processing needs of the Council, including those of the Administrative Office and of TRADU. The entire Council operation is expected to be professionally self-sufficient by the end of the project, and to be well on its way to financial independence.

4.2 COSTS

Detailed EAEC cost estimates totalling $11,173,260 for the ten years of the project are given in line 14 of Table 5. The draft AID technical assistance budget totalling $2,931,000 is detailed in Table 7. Program options, with their budgets

and implications, have been presented in Section 3.2.

A tentative estimate of necessary local currency costs indicates that these costs will not exceed $150,000 over the life of the project. The approximate breakdown is as follows:

Estimated Local Currency Costs

Education allowances @ $1,500 per man-year.....	$ 73,550
Utilities @ $300 per man-year.....	14,250
Maintenance @ $600 per man-year.....	28,500
Local travel for consultants.....	4,000
Local support items for in-service training @ $250 per man-year.....	10,250
Other.....	9,450
Total	$140,000

NOTES ON TABLES

1. The years referred to in the supplementary tables are Fiscal Years (FY) which are from 1 July to 30 June. For example, FY 69 begins 1 July 1968 and ends 30 June 1969.

2. The projections used in the supplementary tables were developed using the following general rules and assumptions.

a) Estimates of examinations volume are conservative. Growth has been projected at the rate of 15% per annum for the EACE. It is likely that the growth rate will be considerably higher than this; thus income estimates based on these figures are highly conservative.

b) It has been assumed that examination fees will not be increased over present rates. Fees now paid to British examination bodies will instead be paid to the EAEC at an increasing rate proportionate to the increase in responsibility for examinations assumed by the EAEC.

c) Cost estimates are projected at maximal rate of growth. It is quite possible that the growth in expenditure will be lower than the projections; it is not likely to exceed the projections.

d) Both income and expenditure estimates relate to the relatively fixed costs of the EAEC. The variable costs of marking, printing, distribution and so forth are assumed to be met by the balance of examination fees. It has been assumed that for the period covered by these projections the actual administration of the examinations will continue to be carried out by the Ministries. The proportion of fees required to meet these variable costs will be paid to the Ministeries. Fee income listed in the attached tables is net of these variable costs.

e) No income has been shown for examinations other than the East African Certificate of Education although provision has been made in the expenditures for specialized staff to develop and administer professional and technical examinations

for selection and certification purposes.

3. It has been assumed that objective tests will be introduced on a limited basis in the East African Certificate of Education in December 1971 and that some of the high quantity papers of the examination will be partially or wholly objective in format by 1979.

4. In summary, these estimates are deliberately liberal with regard to the amount of time and government subsidy required for the Council to become professionally and financially independent.

Table 1. Subjects Offered in East African Certificate of Education (1968)

English Language (two papers)	Agricultural Biology
Literature in English	Physics Theory
Life of Christ	Physics Practical
Life of Christ	Physics Alternative to Practical
Greek Gospel	Chemistry Normal Theory
Acts	Chemistry Alternative Theory
Old Testament History (Section A)	Chemistry Practical
Old Testament History (Section B)	Chemistry Alternative to Practical
Old Testament History (Section C)	Biology (1 & 2)
Islamic Religious Knowledge	Physics/Chemistry (1, 2, & 3)
History (228/1)	Art, Still Life
History (229/1)	Art, Nature
History (230/1)	Art, Living Person
Empire History (232/1)	Art, Imaginative Composition
English Social & Economic History	Art-Crafts A
Development of Tropical Africa	Art-Crafts B
East African History	Art, Study of Art
Alternative Syllabus in African History	Music, Theory
Geography of East Africa	Music, Harmony
Latin I	Music, General
Latin II	Music, Aural
Latin III	Woodwork
French (1 + 2)	Metalwork
German (1 + 2)	Needlework (1 & 2)
Italian	Cookery (1 & 2)
French (East African Syllabus)	General Housecraft (1 & 2)
Serbo Croat	Engineering Science
Modern Hebrew	Surveying
Luganda	Geometrical & Mechanical Drawing
Swahili	Geometrical & Building Drawing
Nyanja	Engineering Work Practical
Shona	Agriculture Principles & Practice
Punjabi	Elements of Commerce
Hindi	Arithmetic
Urdu	Shorthand & Typing
Mathematics A (1, 2,& 3)	Commerce
Mathematics B (1 & 2)	Principles of Accounts
Mathematics C (1 & 2)	Health Science
Mathematics - Southampton Mathematics Projects (1 & 2)	
Additional Mathematics (1 & 2)	
Gujerati	
General Science	
Agricultural Science	

Table 2. Organisation Chart for EAEC, 1978-79

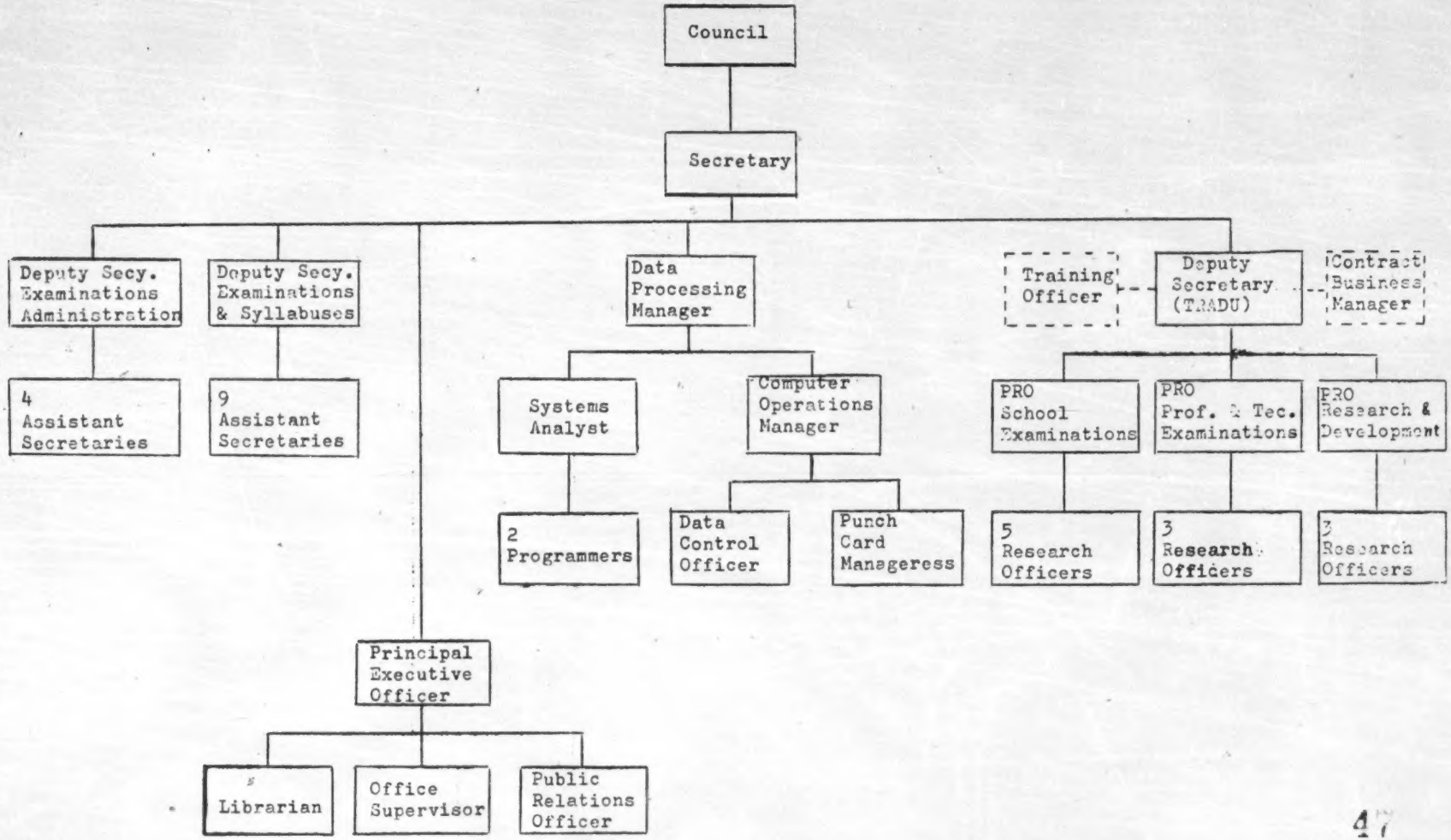

Table 3. Summary of EAEC Projected Income and Expenditure, FY 70-79 (shs x 1,000)

SOURCE	Fiscal Year Ending										
	70	71	72	73	74	75	76	77	78	79	70-79
Income											
Exam. Fees	-	360	780	1,320	2,040	2,730	3,600	4,590	5,800	6,700	27,920
Gov't. Subsidy	2,406	3,414	3,865	4,167	3,913	3,701	3,319	2,748	2,051	1,369	30,953
Total Income	2,406	3,774	4,645	5,487	5,953	6,431	6,919	7,338	7,851	8,069	58,873
Expenditure											
Adm. Office	1,990	2,432	2,874	3,316	3,758	4,200	4,642	5,085	5,528	5,970	39,795
TRADU/DPU	416	1,342	1,771	2,171	2,195	2,231	2,277	2,253	2,323	2,099	19,078
Total Expenditure	2,406	3,774	4,645	5,487	5,953	6,431	6,919	7,338	7,851	8,069	58,873

Table 4. Projected EAEC Volumes and Fee Income, FY 69-79 (x1,000)[1]

East African Certificate of Education

Country	1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979	
	No.	$	No.	$	No.	$	No.	$	No.	$	No.	$	No.	$	No.	$	No.	$	No.	$	No.	$
Kenya	(17)	-	(20)	-	(23)	184	(26)	390	(30)	660	(34)	1020	(39)	1365	(45)	1800	(51)	2295	(58)	2900	(67)	335(
Uganda	(9)	-	(10)	-	(12)	96	(14)	210	(16)	352	(18)	540	(21)	735	(24)	960	(27)	1215	(31)	1550	(36)	180(
Tanzania	(7)	-	(8)	-	(10)	80	(12)	180	(14)	308	(16)	480	(18)	63(	(21)	840	(24)	1080	(27)	1350	(31)	155(
Totals	(33)	-	(38)	-	(45)	360	(52)	780	(60)	1320	(68)	204(	(78)	2730	(90)	3600	(102)	4590	(116)	5800	(134)	670(
Rates per Candidate						8		15		22		30		35		40		45		50		5(

[1]Volume increase estimated at 15% per year.

Table 5. EAEC Projected Expenditures, FY 70-79 (shs x 1,000)

Expenditure	Fiscal Year Ending										
	70	71	72	73	74	75	76	77	78	79	70-79
1. Personal Emoluments	11	378	678	884	953	1,006	1,015	1,015	1,060	997	7,997
2. Administration											
Office	20	50	60	70	70	70	75	75	75	75	640
Local Travel	20	40	50	60	60	60	65	65	70	70	560
Overseas Travel		21	42	42	6	6	6	-	-	-	123
M. Veh. Maintenance	6	6	8	9	9	9	9	9	9	9	83
3. Examinations											
Test Materials	34	34	72	81	81	81	86	86	91	91	737
Trial Testing	20	20	40	60	60	60	65	65	70	70	530
Meetings	20	20	24	30	30	30	40	40	50	50	334
4. Accommodations											
Housing	1	247	423	548	576	579	581	581	581	533	4,650
Office	40	60	80	80	80	80	80	85	85	85	755
Maintenance (10%)	4	30	50	63	66	66	66	67	67	62	541
5. Furniture & Equipment	70	100	80	80	40	20	20	20	20	20	470
6. Office Site	-	60	-	-	-	-	-	-	-	-	60
7. M. Veh. Loans	124	124	-	-	-	-	-	-	-	-	248
8. Contingencies	10	20	20	20	20	20	25	25	25	25	210
9. Tech. Asst. Housing	36	132	144	144	144	144	144	120	120	12	1,140
10. Total TRADU/DPU (1-9)	416	1,342	1,771	2,171	2,195	2,231	2,277	2,253	2,323	2,099	19,078
11. EAEC Adm. Office	1,990	2,432	2,874	3,316	3,758	4,200	4,642	5,085	5,528	5,970	39,795
12. Total EAEC (10 + 11)	2,406	3,774	4,645	5,487	5,953	6,431	6,919	7,338	7,851	8,069	58,873
13. AID Budget	457	2,357	4,686	2,529	2,371	2,336	2,214	1,807	1,736	443	20,936
14. Total Project (12 + 13)	2,863	6,131	9,331	8,016	8,324	8,767	9,133	9,145	9,587	8,512	79,809

Table 6. Schedule for 31 Man-Years of Overseas Academic Training
(15 to Masters and 4 to Doctorate)

	Academic Years					
	70/71	71/72	72/73	73/74	74/.5	75/76
Deputy Secretary (TR/DU)	M		D	D	D	
PRO (School Examinations)	M		D	D	D	
Research Officer	M					
Research Officer	M					
Research Officer	M					
Research Officer	M					
Research Officer	M					
PRO (Prof. & Technical)		M		D	D	D
PRO (Research & Dev.)		M		D	D	D
Systems Analyst		M				
Data Processing Manager		M				
Research Officer		M				
Research Officer		M				
Wastage		M				
Research Officer			M			
Research Officer			M			
Research Officer			M			
Research Officer			M			
Wastage			M			
Total in Training	7	7	7	4	4	2

Table 7. Estimated AID Technical Assistance Budget, FY 70-79 ($ x 1,000)

	Fiscal Year										
	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	69-79
1. Technical Assistance Staff											
A. Resident Staff[1]	53	193	210	210	210	210	210	175	175	18	1,664
B. Consultants[2]	-	15	15	15	15	15	15	15	15	15	135
C. Other related costs[3]	5	20	25	25	25	30	30	20	15	10	205
2. Training											
A. Training Courses[4]	5	30	30	30	30	30	30	30	30	15	260
B. Inservice Training (Staff)[5]	-	-	7	11	10	5	2	4	2	-	41
C. Academic Training[6]	-	49	49	49	28	28	14	-	-	-	217
3. Equipment											
Data Processing[7]	1	3	300	4	4	4	4	4	4	4	332
B. Other	-	20	20	10	10	5	5	5	2	-	77
4. Total AID Assistance	64	330	656	354	332	327	310	253	243	62	2,931
5. Building Grant (non-AID)	-	600	-	-	-	-	-	-	-	-	-
6. Total External Assistance	64	930	656	354	332	327	310	253	243	62	3,531

[1] Resident Staff: at $ 35,000 per man-year.

[2] Consultants: at $ 30,000 per man-year.

[3] Other related costs: miscellaneous support items including rent supplements and some logistic support items under the contract. Remaining logistic support items to be covered by USAID and EAEC as specified.

[4] Training Courses: training item writers and editors not EAEC permanent staff. Courses to be conducted in the three member countries at $ 5,000 per course.

[5] Inservice Training (Staff): provides two years of inservice training after receipt of academic degree in U.S. Includes costs of special materials, meetings, and specialized training courses at EAEC at $ 1,000 per man-year.

[6] Academic Training: recommended to be part of the contract rather than under separate training grants. Based on $ 7,000 per man-year.

Table 8. Scheduled Man-Years of Technical Assistance

	Fiscal Year Ending										TOTAL
	70	71	72	73	74	75	76	77	78	79	70-79
Deputy Secretary (TRADU) and Chief of Party (AID)	½	1	1	1	1	1	1	1	1	½	9
Data Processing Manager	¼	1	1	1	1	1	1	1	1	-	8¼
Principal Research Officer (School Examinations)	-	1	1	1	1	1	1	1	1	-	8
Principal Research Officer (Professional and Technical Examinations)	-	½	1	1	1	1	1	1	1	-	7½
Training Officer	¼	1	1	1	1	1	1	-	-	-	6¼
Contract Business Manager	½	1	1	1	1	1	1	1	1	-	8½
Total Resident Advisors	1½	5½	6	6	6	6	6	5	5	½	47½
Consultants and Short-Term Staff	-	½	½	½	½	½	½	½	½	½	4½
Total Technical Assistance	1½	6	6½	6½	6½	6½	6½	5½	5½	1	52

TABLE I

Budget Summary of Options 1 and 2

Option	Program	Savings	Costs ($ x 1,000)
1	As recommended	-	2,931
2	Less Professional and Technical Examinations Section	441	2,490

Details of Savings under Option 2

Technical Assistance	
Resident Staff, 7½ years @ 35	263
Consultants, 1 year @ 30	30
Other related costs (7.5/52) x 205	30
Training	
Training Courses, 10 @ 5	50
Inservice Training, 9 years @ 1	9
Academic Training, 7 years @ 7	49
Equipment	10
Total	441

Table 10. Assumptions Regarding Technical Assistance Local Support

	EAORA CONTRACT	USAID MISSION	EAEC
Housing			
Rent	X		X
Furniture		1	
Appliances		X	
Maintenance		X	
Utilities	X		
Transportation			
Local (driver			X
Local (operational costs			X
Local (maintenance			X
East African international			X
Duty-free entry of goods (first 6 months)		X	

1. USAID provides miscellaneous furniture, beds, mattresses, etc. for all resident technical advisors.